

ABSTRACT

Bi-directional Blowers capable of sucking-in ambient air and blowing-out hot air from system box simultaneously are invented to cool computer or electronic systems. The application to cooling laptop computers is disclosed in very details. The bi-directional blowers are comprised of a DC or AC motor, a rotary part of blades and/or impellers, an optional cover, and a housing frame with built-in broken walls, stationary blades and airfoils, which control the flow volume and direction. The separate zone to divide the blow-out and suck-in channels is constructed using the broken walls with conjunction of the blades and/or impellers. The rotary part is the radial blades, or a combination of blades and impellers. Two types of bi-directional blowers are explored: the pressure type and hybrid type. A one-way blower of pressure type utilizes the same principle of the bi-directional blowers such that the inlet and outlet can be located on sides of the blower. With the advantages of the invention, the air gap between laptop bottom and top surface of the desk can be eliminated for better heat conduction through lower side because the desk can be used as a natural heat sink.